

551.506 (2611) WEATHER OF NORTH AMERICA AND ADJACENT OCEANS.

NORTH ATLANTIC OCEAN.

By F. A. YOUNG.

The average pressure for the month was somewhat below the normal at land stations on the south coast of Newfoundland; it was slightly above in the Gulf of Mexico and nearly normal on the Atlantic coast of the United States.

The number of days in which fog was observed was apparently less than usual, as comparatively few fog reports were received.

The number of days with winds of gale force was considerably above the normal, especially in southern waters and over the western section of the steamer lanes, due to the unusually severe and protracted hurricanes of tropical origin.

From the 2d to the 4th there were moderate disturbances over different portions of the steamer lanes as shown by the following storm logs.

Belgium S. S. *Sunoco*:

Gale began on the 2d, wind SSW. Lowest barometer 29.50 inches at 7 a. m. on the 2d, wind S. 9; position, latitude 46° 28' N., longitude 32° 22' W. End of gale 9 a. m. on the 2d, wind WSW. Highest force of wind 10, S.; shifts S.-WSW.—W.-NW.

British S. S. *Rexmore*:

Gale began on the 3d, SSE. Lowest barometer 29.56 inches at 8 a. m. on the 3d, S., 8; position, latitude 52° 04' N., longitude 20° 29' W. End of gale on the 3d, W. Highest force of wind 8, S.; shifts SSE.—E.—SSW.

American S. S. *Asquam*:

Gale began on the 4th, WSW. Lowest barometer 29.59 inches at 2 a. m. on the 4th, N.; position, latitude 47° N., longitude 38° W. End of gale on the 4th. Highest force of wind 9, WSW.; shifts WSW.—W.

On the 5th, 6th, and 7th, conditions were comparatively quiet, except that on the 6th and 7th there was a disturbance of limited extent off the coast of Mexico, near Tampico. The American S. S. *Danville* reports:

At Tampico, Mexico, 7 p. m. on the 6th, SE. wind, hurricane force, barometer 29.41 inches.

Storm log from American S. S. *A. C. Bedford*:

Gale began on the 7th, SE. Lowest barometer 29.62 inches at 4 a. m. on the 7th, S. 9; position, latitude 22° 50' N., longitude 97° 03' W. End of gale on the 7th, S. Highest force 9; shifts SE.—S.

There will be found elsewhere a description of the tropical hurricanes, together with chart showing tracks from the 8th to the 15th.

On the morning of the 8th the Dutch S. S. *Noorderdijk*, although some distance from the center of the LOW, experienced strong southwesterly winds, as shown by following report:

From 4 to 8 a. m. on the 8th, fresh ESE. gale, shifting and decreasing to strong SW. breeze. High SE. swell, shifting and decreasing to light SW. Heavy rain.

On the 8th there was also a well defined LOW near latitude 50 N., longitude 28 W. Storm log follows:

American S. S. *Potomac*:

Gale began on the 8th, SW., 6. Lowest barometer 29.54 inches, 10 a. m. on the 8th, SW., 10; position, latitude 47° 07' N., longitude 29° 04' W. End of gale on the 8th, NW. Highest force of wind 10, SW.; shifts WSW.—W.—WNW.

This LOW moved rapidly eastward and on the 9th the center was about 400 miles west of the coast of Scotland. Storm log follows:

Danish S. S. *Hellig Olav*:

Gale began on the 9th, SSE. Lowest barometer 29.10 inches at noon on the 9th, SE.; position, latitude 57° 45' N., longitude 13° 35' W. End of gale on the 10th, WSW. Highest force of wind 8; shifts SSW.—W.—WSW.

On the 9th there was also a limited disturbance north of Bermuda as shown by storm log from the American S. S. *Remus*.

Gale began on the 9th, S. Lowest barometer 29.62 inches at 3 p. m. on the 9th, S, 10; position, latitude 38° 12' N., longitude 63° 05' W. End of gale on the 9th, S. Highest force of wind, 10, S; steady from south.

The American S. S. *Claire*, on her voyage from Huma-coa on the south coast of Porto Rico to San Juan, experienced moderate easterly to southeasterly gale with frequent rain squalls on the night of the 9th and morning of the 10th.

The depression that was north of Bermuda on the 9th moved slowly toward the northeast, and on the 10th was central near latitude 42° N., longitude 55° W. While only moderate winds were reported at Greenwich noon on the 10th, heavy weather was encountered later in the day as shown by following storm logs:

American S. S. *Bethelridge*:

Gale began on the 10th, SW. Lowest barometer 29.78 inches at 10 a. m. on the 10th, S, 8; position, latitude 39° 40' N., longitude 55° 04' W. End on the 10th, NW. Highest force of wind, 8, SSW.; shifts SSW.—S.

Danish S. S. *United States*:

Gale began on the 10th, ENE. Lowest barometer 29.32 inches at 5 p. m. on the 10th, ENE, 10; position, latitude 42° 22' N., longitude 52° 07' W. End of gale, 7 p. m. on the 10th, NE. Highest force of wind 10, ENE.; shifts ENE.—NE.

Charts IX to XVI show the conditions from September 11 to 18, inclusive. So many reports and storm logs were received from vessels that encountered heavy weather during this period, it was found impossible to give them all here on account of limited space. A number of the more characteristic follow.

Dutch S. S. *Amsteldijk*:

Gale began on the 12th, SSE. Lowest barometer 29.77 inches at 4 a. m. on the 14th, S, 8; position, latitude 25° 42' N., longitude 66° 30' W. End of gale on the 14th, WSW. Highest force of wind 8, S.; shifts SSE.—SSW.—SW.

American S. S. *Glendoyle*:

At 4 p. m. on the 10th, wind NW., 3, barometer 29.68 inches; midnight, NW., 5, 29.58 inches; 4 a. m. on the 11th, NNW., 11, 29.30 inches; 8 a. m. WSW., 10, 29.49 inches. Noon S, 5, 29.65 inches. Ship's position stationary at latitude 18° 27' N., longitude 69° 18' W.

American S. S. *Cook*:

Gale began on the 10th, SE. At 4 p. m. on the 10th wind SE, 8, barometer 29.87 inches; position, latitude 28° 51' N. longitude 63° 28' W.; 8 p. m. SE., 8, 29.84 inches; midnight, SE., 8, 29.73 inches; 4 a. m. on the 11th, SE., 8, 29.65 inches (lowest barometer). End of gale at 8 a. m. on the 11th. Highest force of wind 9, SE.; shifts SE.—N.

British S. S. *Finchley*:

From 8 a. m. on the 11th wind increasing and backing from SE. to E. High SE. swell began at 9 a. m., being very pronounced from 1 to 3 p. m.; 4 to 5 p. m., sea had breaking tops, wind E., S.; barometer 29.50 inches at 5 p. m. Wind and sea moderate during the night. At 7 p. m. on the 12th began to rain, wind SE., 5; 10 p. m. wind force 9. Midnight force 10. 12:15 to 12:45 a. m. on the 13th calm with heavy rain. At 12:45 wind resumed with increased force from SE. From 6 to 8 a. m. wind E., force 11. Ship hove to from 9 a. m. to 12:30 p. m., wind NE. At 12:30 wind shifted from NE. to NNW., blowing with increased force, moderating at 6 p. m. when it backed to SW. Lowest barometer 28.56 inches at 11 a. m. on the 13th. Estimated position at 8 p. m. on the 12th, latitude 27° 50' N., longitude 69° 50' W.

American S. S. *Holyoke Bridge*:

Gale began on the 12th, E. Lowest barometer 29.61 inches at 2 p. m. on the 12th, NE.; position, latitude 32° 45' N., longitude 63° 20' W. End at 8 p. m. on the 12th, NW. Highest force of wind 11. Shifts E.—ENE.—NE.—N.

American S. S. *West Durfee*:

At 2:30 p. m. on the 12th barometer began falling, wind increasing steadily to force 8 at midnight when barometer read 29.71 inches. Wind then began to shift slowly, barometer rising. At noon on the 15th, wind SW., 4. Position at 2:30 p. m. on the 12th, latitude 32° 30' N., longitude 67° 34' W.

American S. S. *Oregonian*:

Gale began on the 12th, SSW. Lowest barometer 29.42 inches at 1 p. m. on the 12th, SW., 7; position, latitude 49° 50' N., longitude 23° W. End of gale on the 12th, NW. Highest force of wind 10; shifts SW.-NW.

British S. S. *Naperian*:

Gale began on the 12th, SW. Lowest barometer 29.75 inches at 2 a. m. on the 13th, NW., 7, in the English Channel. End of gale on the 14th, NNE. Highest force of wind 9; shifts SW.-NW.-WSW.

American S. S. *Capillo*:

7:22 p. m. (Greenwich time), September 11th; position, latitude 30° 50' N., longitude 63° 54' W.; wind ESE., 9; barometer 29.58 inches. 9:26 p. m., ENE., 12, barometer 29.10 inches (lowest reading); 12:32 a. m. on the 12th, NW., 9, 29.80 inches; 3:39 a. m., on the 13th, wind variable 4, barometer 29.96 inches; position, latitude 29° 23' N., longitude 70° 08' W. 9:52 a. m., NNE., 12, 29.50 inches; 2 p. m. NE., 10, 29.72 inches. 4:04 p. m., NNW., 6, 29.86 inches; position latitude 28° 25' N., longitude 72° 23' W.

British S. S. *Caledonian*:

Gale began on the 12th, ENE. Lowest barometer 29.15 inches on the 14th; position, latitude 55° 54' N., longitude 11° 50' W. End of gale on the 14th, NW. Highest force of wind 8; shifts SW.-WSW.-W.

American S. S. *Holyoke Bridge*:

Gale began on the 14th, ESE. Lowest barometer 29.19 inches at noon on the 15th, SSW., at Bermuda. End 7 p. m., on the 15th, NW. Highest force of wind 12; shifts S.-SSW.-SW.-WSW.-W.

British S. S. *War Nizam*:

Gale began on the 14th, NNE. Lowest barometer 28.76 inches at noon on the 14th, NE., 11; position, latitude 43° 40' N., longitude 44° 35' W. End on the 14th, NW. Highest force of wind 11; shifts ENE.N.

Italian S. S. *Giuseppe Verdi*:

Gale began on the 14th, SW. Lowest barometer 29.14 inches at 9 p. m. on the 14th, SW., 10; position, latitude 42° 50' N., longitude 44° 35' W. End of gale on the 14th, SW. Highest force of wind 12, WSW.; shifts not given.

American S. S. *Eastern Sailor*:

Gale began on the 14th, SW. Lowest barometer 29.65 inches at 11 a. m. on the 14th, S., 7; position, latitude 43° 53' N., longitude 17° 38' W. End of gale on the 15th, NNW. Highest force of wind, 10; shifts S.-W.-N. by W.

American S. S. *West Durfee*:

At 10 a. m. on the 14th, wind SSE., 5; barometer, 29.67 inches. Wind increasing; barometer falling slowly. 6:30 p. m., 29.39 inches (lowest), wind S. 10. 2 p. m. 15th, W. by S. 5; position at midnight on the 14th, latitude 30° 24' N., longitude 61° 50' W.

Swedish S. S. *Stockholm*:

Gale began on the 15th, SE. Lowest barometer 28.59 inches at 4 p. m. on the 15th, NW.; position, latitude 54° 32' N., longitude 36° 26' W. End at 8 p. m. on the 15th, NW. Highest force of wind 10, NW.; steady from NW.

American S. S. *West Wauna*:

Gale began on the 15th, S. Lowest barometer 29 inches at 1 a. m. on the 16th, WSW.; position, latitude 37° 35' N., longitude 54° 40' W. End of gale on the 16th, WNW. Highest force of wind 12; shifts SW.-WSW.

American S. S. *Sacandaga*:

Gale began on the 16th, SW. Lowest barometer 29.73 inches at 8 a. m. on the 16th, SW; position, latitude 36° 19' N., longitude 52° 23' W. End of gale at 4 p. m. on the 16th, NW. Highest force of wind, 10; shifts SSW.-W., 3 p. m. NW.

British S. S. *Swazi*:

Gale began on the 16th, S. Lowest barometer 28.87 inches at 9 p. m. on the 16th, SSW., 11; position, latitude 43° 40' N., longitude 44° W. End of gale on the 17th, W. Highest force of wind 12; shifts SSW.-SW.-WSW.

Dutch S. S. *Newyork*:

Gale began on the 17th, SSE. Lowest barometer 28.97 inches at 2 a. m. on the 17th, SSE.; position, latitude 45° 44' N., longitude 41° 06' W. End of gale on the 17th, WSW. Highest force of wind, 11; shifts S.-W.

American S. S. *Oregonian*:

Gale began on the 16th, SE. Lowest barometer 28.66 inches at 9 p. m. on the 16th, SW.; position, latitude 47° 30' N., longitude 42° W. End on the 17th, NW. Highest force of wind, 12; shifts SE.-NW.

British S. S. *Kenbane Head*:

Gale began on the 17th, SSW. Lowest barometer 29.75 inches at 6:30 a. m. on the 19th, SSW., 8; position, latitude 41° 30' N., longitude 54° W. End of gale on the 19th, SW. Highest force of wind 8, SSE.; shifts SSW.-SW.

French S. S. *Lafayette*:

Gale began on the 17th, SSW. Lowest barometer 29.47 inches at 6 p. m. on the 19th, SW., 5; position, latitude 48° 30' N., longitude 45° 43' W. End of gale on the 20th, NNW.; shifts not given.

British S. S. *Oxonian*:

Gale began on the 17th, SSW. Lowest barometer 29.41 inches at midnight on the 17th, SSW.; position, latitude 56° 48' N., longitude 25° 11' W. End of gale on the 18th, WNW. Highest force of wind 9; shifts SW.-WSW.

On the 19th there was a low over Newfoundland which probably moved in a northeasterly direction, although it was impossible to trace its track accurately on account of lack of observations. On the 22d its center could not have been far from Iceland, as on that day a barometric reading of 28.70 inches was recorded at Seydisfjord. Storm logs follow:

British S. S. *Winnebago*:

Gale began on the 19th, SSW. Lowest barometer 29.70 inches at noon on the 19th, SSW., 8; position, latitude 48° N., longitude 37° W. End of gale on the 20th, SW. Highest force of wind 8, SSW., steady from SSW.

American S. S. *Glen Ridge*:

Gale began on the 19th, SW. Lowest barometer 29.52 at 8 a. m. on the 21st, SW., 8; position, latitude 50° N., longitude 34° 15' W. End of gale on the 21st. Highest force of wind 8; steady from the SW.

French S. S. *La Lorraine*:

Gale began on the 20th, SW. Lowest barometer 29.85 inches at 7 a. m. on the 20th, SSW., 9; position, latitude 49° 40' N., longitude 25° 30' W. End of gale on the 21st, WNW. Highest force of wind 9, SSW.; shifts not given.

British S. S. *Adra*:

Gale began on the 20th, SW. Lowest barometer 29.58 inches at 6 p. m. on the 20th, S., 7; position, latitude 58° 30' N., longitude 15° 30' W. End of gale on the 20th, WNW. Highest force of wind 8; shifts S.-SSW.-SW.

American S. S. *Colquitt*:

Position at G. M. N. on the 20th, latitude 41° 23' N., longitude 42° 38' W. Noon to 4 p. m., heavy rain squalls, fresh SW. gale. Midnight to 8 a. m. on the 21st, fresh gale with squalls; barometer 29.91 to 29.86 inches.

Position at G. M. N. on the 21st, latitude 41° 50' N., longitude 37° W. At noon heavy rain; barometer 29.90 inches, southerly gale. 4 p. m., same, sky overcast, heavy sea. Between 4 and 8 p. m. gale increased to hurricane force during squalls; barometer steady at 29.96 inches.

British S. S. *Adra*:

Gale began on the 21st, SSW. Lowest barometer 29.45 inches at 6 p. m. on the 21st, SSW., 7; position, latitude 57° 25' N., longitude 20° 20' W. End of gale on the 23d, W. Highest force of wind 8; shifts SSW.-SW.-W.

From the 23d until the 29th moderate weather with uniformly high pressure prevailed over practically the entire ocean. On the 30th there was a slight depression central near latitude 47° N., longitude 37° W., and moderate northwesterly gales were reported from a very limited area, while light to moderate winds were the rule over the remainder of the ocean.

ADDITIONAL NOTES ON THE HURRICANES OF SEPTEMBER, 1921.
551.515 (729)

There will be found on pages 522 and 523 of the REVIEW descriptions of the tropical hurricanes of September, the latter accompanied by a chart showing portions of the tracks of the two in existence between the 8th and 15th. In addition to the facts that have already been brought out in connection with these storms it is worth noting that the principal hurricane of the month, the one originating southeastward of the Windward Islands probably on the 7th or 8th, formed at a point unusually far south, about due east of the Island of Trinidad. In this respect it was similar to the hurricanes of June 23-27, 1831, and October 6-12, 1892, but these two storms moved on a course somewhat north of west, the former striking the Yucatan Peninsula, the latter the coast of Honduras. Hurricanes that have pursued courses comparable with the one under consideration were those of October 12-18, 1780, known as "The Great Hurricane," September 11-21, 1846, October 1-6, 1889, September 9-19, 1898, and September 8-17, 1908. It is not certain, however, that any of these originated as far to the southward as did the one of the present year or pursued such a long track after leaving tropical waters.

It has been suggested that the storm noted at Iceland on the 22d was in reality this so-called Windward Islands hurricane, which passed to the southeast of Newfoundland on the 17th, but the reports available do not clearly show this to be the case.

The first positive evidence of the existence of this hurricane was contained in a wireless message sent out at 8 a. m. of the 8th from the British S. S. *Dundrennan*, then about 150 miles south of Barbados. This message gave information of great value to many interests, as did several others received from various ships at different times during the progress of the storm. In the beginning the area affected by the hurricane was rather large and damage was caused at both Trinidad and Barbados. After passing the Grenadines, however, the area affected appeared to contract somewhat and to have again increased in size only after the storm reached the higher latitudes in mid-ocean.

Several vessels involved in this hurricane were in the calm center. The first of these was the American S. S. *West Faralon*, which on the 11th, at a point somewhat to the southward of the Mona Passage, was in the center for a period of 55 minutes, from 2.20 p. m. to 3.15 p. m. The lowest barometer reading recorded was 28.38 inches. On the 16th the American S. S. *Osvego* was in the center near latitude 41° N., longitude 53° W. The lowest barometer reading reported by the *Osvego* was 28.46 inches. On the 17th, from 12 to 12:30 a. m., the American S. S. *Capulin* was in the center near latitude 47° N., longitude 45° W. The lowest barometer observed on board this vessel was 28.32 inches. Capt. Henry A. Davis states in his report that "at midnight (16th-17th) the wind fell to a flat calm, sea without a ripple." A half hour later the wind freshened suddenly from NW. by N. and soon was blowing with hurricane force, high seas driving over the vessel.

Many vessels encountered this hurricane during its extended career and considerable damage to shipping resulted. Upward of 80 lives were lost and in the Windward Islands great numbers of people were rendered homeless.

On September 10, while the hurricane referred to was somewhat to the southeastward of the Mona Passage, a second center formed in the region immediately to the eastward of the Bahamas. The British S. S. *Camito*,

passing Grand Turk on the morning of the 11th, reported having encountered a hurricane 200 miles to the northward and was thought to have been in the center of it. On the 12th the American S. S. *Capillo* reported by wireless that she was involved in a hurricane to the southeast of Bermuda. This storm, which at first was of small size and fairly rapid movement, increased in size and also in rate of travel after passing Bermuda. It followed a path very similar to that of its successor north of latitude 30° and in mid-ocean was comparable to the latter in intensity. It was last observed on the 15th in latitude 53° N., longitude 35° W.

This secondary hurricane, so-called, was encountered by numerous vessels in the transatlantic steamer lanes and has been confused to some extent with its more important contemporary. It was this hurricane in which the French S. S. *La Savoie* was involved on the 14th-15th, this vessel, according to press dispatches, being forced to run before the wind for 18 hours and sustaining some deck damage. The Italian S. S. *San Pietro* was in the calm center of this hurricane from 5 a. m. to 5.30 a. m. of the 14th, the wind a dead calm but with a tremendous, confused sea. The lowest pressure observed on board the *San Pietro* was 28.90 inches.

Several westward-bound vessels encountered both this storm and the one which followed from two to three days later, thus having the exceptional experience of meeting two distinct hurricanes within the space of a few days.

Many excellent reports dealing with various phases of these storms have reached the Weather Bureau from masters and officers of vessels that were involved. Lack of space prevents giving these reports in detail. A number of storm logs will be found on pages 515-516.—F. G. T.

551.515 (265.2)

NORTH PACIFIC OCEAN.

By F. G. TINGLEY.

Pressure conditions during September at the island stations of Dutch Harbor, Midway Island, and Honolulu were not marked by any extremes. At the first-named station there were frequent moderate changes in the barometer during the first and second decades, the average for these periods being close to the normal. During the last decade pressure averaged below normal by approximately 0.16 inch. At Midway Island pressure was slightly above normal, about 0.01 inch for the month, the barometer falling below the normal only on the 16th and 17th and from the 26th to the 30th. At Honolulu pressure averaged above normal by about 0.01 inch.

Unlike the North Atlantic, which was swept by several severe gales during the month, the North Pacific Ocean was relatively quiet during September. Occasional gales, mostly of a moderate character, were experienced by a few reporting vessels during the first and middle parts of the month. Only in the last four days was there any indication of renewed atmospheric activity in this ocean.

From the 1st to the 3d the Japanese S. S. *Horaizan Maru*, Capt. K. Yamaguchi, Observer M. Okhara, Muroran for San Francisco, was involved in a gale in latitude 50° 30' N., longitude 177° E. to 174° W. The highest force of wind experienced was 8, SE. From the 12th to the 14th, in the same region, the Japanese S. S. *Lyons Maru*, Capt. S. Fujimura, also from Muroran for San Francisco, had a moderate to whole gale with a very high sea. This appears to have been the most important gale of the month in the northern part of the ocean,